

Previously undiagnosed illness among adults discovered through a survey in East Harlem indicates the need for expanded health education.

Multiphasic Screening Program in a Low Income Area

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THE East Harlem Health District, covering an area of 1.6 square miles, lies in the northeastern corner of Manhattan Island. Of its 195,000 inhabitants, about two-thirds have low incomes. About one-half of the population are Puerto Ricans; a small percentage are Negroes.

Within the district are 3 large teaching hospitals with a total capacity of 2,289 beds and extensive outpatient services. All 3 are affiliated with medical schools and all 3 have schools of nursing. Of 408 physicians who have offices in this area, by far the majority are specialists serving the city as a whole, but 105 of them indicated that they are engaged in general practice.

In spite of the accessibility and availability of excellent medical care resources within the district and in the adjacent areas, it has been the impression of the staff at the East Harlem Health Center that the population avails itself of these resources only for emergency care and for acute illness. Unless hospitalization is indicated and made available, treatment is begun in the outpatient service and may never be completed because the patient is too ill to travel to the hospital for continued observation.

It is our impression that the home rarely provides for any medical care. This impression

is based on the broad experience of the health center's staff, gained from more than 128,000 visits by patients each year to our service facilities and the more than 8,000 field visits annually that our nurses make. For example, out of a register of 437 East Harlem residents with active tuberculosis, only 9 are under the care of a private physician.

Lack of care in the home is also evident in the large percentage of the elementary school population of 30,436 for whom the health center provides a school health service. Of 5,560 examinations of these children during the 1955-56 school year, 89.9 percent were done by school physicians of the New York City Department of Health. Except for some service provided by the city's department of welfare for its clients, no agency in the district provides free at-home medical care.

On the basis of the available rates, the East Harlem District falls into the quartile having the highest morbidity and mortality in the city. Measures for early case finding, highly desirable in any area, seem, therefore, to be particularly needed in this district. Children from infancy through high school age get a large measure, if not all, of the preventive services they receive from the child health stations and in the school health program. For adults, preventive services at the health center are limited to its chest, social hygiene, and cancer detection clinics. The hospitals provide little, if any, of this type of service.

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In order to assay the situation to some degree, the East Harlem Health Center conducted a series of three multiphasic screening programs on three evenings in the spring of 1956. On the basis of an estimated capacity for 200 screenings an evening, we set a goal of 600 patients. Our health education campaign for 3½ months preceding the first screening night included letters to all suitable community agencies and organizations, press releases in English and Spanish, and, on request, speakers for scheduled meetings. Posters were distributed throughout the area. The staff of the center was asked to refer East Harlem adults who were not already patients at one of the three clinics

It is noteworthy that 306 of the 435 patients (70 percent) were referred to the center by a parent-teacher association from a single school in the area. This parents' group from a school with 1,633 students, 95 percent of them Puerto Rican, was active in spreading information about the survey and in urging members to participate. This group received a good orientation on what to expect on the screening nights and on the course of the subsequent followup.

Methods and Criteria

At the screening sessions a total of 435 persons were examined. A maximum number of nine diagnostic procedures were available to a patient. Only 16 persons had all 9 tests, and only 10 persons had fewer than 5. The average number per patient was 6.

The patients were weighed and measured, and a panel of physicians checked their skin, mouth, eyes, and mucous membranes, and gave them a quick nutrition evaluation.

Chest X-rays were taken on 70-mm. film, following the standard procedure set up by the New York City Health Department's bureau of tuberculosis. Persons with unsatisfactory or suspicious X-rays were recalled for a standard 14" by 17" X-ray and followup in the chest clinic. Cardiac pathology was picked up by the same service.

Blood specimens were drawn for serologic and blood sugar tests. The Mazzini test was used to screen for syphilis in accordance with the standard procedure of the health department's bureau of preventable diseases. The Kolmer and VDRL tests were done on positive

reactors. If these tests were positive, the person was recalled to the social hygiene clinic for a history and a physical examination as well as a repeat serologic test.

Tubes containing potassium fluoride were used in the blood sugar test. The time of the last meal was obtained. Since the screenings were held in the evening, the tubes were refrigerated overnight and analyzed the following morning in the laboratory of the diabetes detection clinic of the Brownsville Health Center. These criteria, used by the diabetes detection clinic, were followed:

<i>Hours since last meal</i>	<i>Screening level for blood sugar (mg.)</i>
Less than 2.....	130
2 to 3.....	110
More than 3.....	100
Not known.....	130

Self-obtained Papanicolaou smears were submitted by the women. These were stained and examined in the cancer detection clinic according to the standard procedure set up by the city's Adult Hygiene Bureau.

Physicians took the blood pressures. We set up this guide for recalls:

<i>Age of patient</i>	<i>Systolic mm. Hg.</i>	<i>Diastolic mm. Hg.</i>
Under 30.....	130	90
30-39.....	140	90
40-49.....	150	90
50 or over.....	150	100

On recall, persons were retested by physicians in the center's clinics or by the district health officer. When high readings persisted for those with suggestive history or symptoms, the patients were referred to treatment agencies.

For the eye tests, an ophthalmologist was provided to the survey by the glaucoma research division of the New York Association for the Blind. The ophthalmologist used the Berens-Tolman hypertension indicator, which picks up tension of 25 mm. Hg. or more. Individuals with this reading were recalled for a history and referred to a treatment agency. In addition to glaucoma, the ophthalmologist reported a number of other eye conditions which he incidentally diagnosed.

The National Society for Prevention of

Blindness supplied technicians to conduct near vision tests. They used the Lebohnson chart at a distance of 14 inches. Patients with a visual acuity of less than 14/21 with or without their glasses were referred for followup. The technicians also carried out field vision tests using the Harrington-Flocks multiple pattern field screener.

Since our regular health department services supplied most of the staff, all of the supplies, the laboratory work, and the followup and voluntary agencies provided the staff for the eye examinations without charge, the cost of the screening evenings is impossible to estimate with any degree of accuracy.

Survey Findings and Followup

All but 33 of those screened were East Harlem residents. Although the survey was especially scheduled in the evening for the convenience of working people, only 114 of the participants were men. Nearly 70 percent (303) were Puerto Ricans; 7 percent (31) were Negroes.

There was a wide age range, but 354 persons were 20-49 years of age because such a large percentage of the screened population came from the parents' group. Five were under 20, and 10 were 70 or older. During the followup we learned that of the 286 persons who gave data on their incomes, 250 claimed a weekly per capita income of less than \$20. The median, excluding 37 cases on welfare, was \$12.24. The average family had 4 or 5 members.

A relatively high percentage of positive findings were expected in this population, but the results far exceeded expectations (table 1). The survey found 525 defects in 312 of the persons examined. Only 123 were completely negative, and this fact was reported to the screenee's private physician, if he had named one, or the screenee was notified by mail (table 2). Relatively serious defects, previously unknown to the participants, were found in 131 (30 percent) of the screened group (table 3).

None of the 312 found to have one or more defects received this information by mail. The findings were reported to a private physician, if his name had been given, or the person was given an appointment at the health center. If any of the defects fell in the area of any one of the health center services, which include chest,

social hygiene, and cancer detection, the patient was recalled by the clinic, advised about all of the positive findings, and referred for treatment.

Table 1. Defects discovered through multiphasic screening of adults in East Harlem, 1956

Test	Total persons screened	Num-ber of persons with acceptable examination or laboratory specimen	Num-ber of defects ¹	Per-cent- age of defects ²
Chest X-ray:				
Lung-----	435	428	10	2.3
Heart-----	435	428	13	3.0
Papanicolaou smear-----	261	212	2	.9
Serology-----	423	420	15	3.6
Blood sugar-----	420	375	50	13.3
Nutrition examination (includes obesity)-----	431	431	249	57.7
Tonometry-----	186	186	7	3.8
Eye inspection-----	186	186	5	2.7
Field vision-----	46	46	5	10.8
Near vision-----	128	128	89	69.5
Blood pressure-----	432	432	80	18.5
Total-----	435	-----	525	-----

¹ Defects were found in 312 persons.

² Percentage of defects compared with number of persons with acceptable examination or laboratory specimen.

Table 2. Persons with no defects found during multiphasic screening of adults in East Harlem, 1956

Age group (years)	Total number of persons tested	Persons without defects	
		Number	Percent
Under 20-----	5	1	20
20-29-----	100	40	40
30-39-----	142	52	36
40-49-----	112	23	20
50-59-----	33	2	6
60-69-----	32	2	6
70 and over-----	10	2	20
Not stated-----	1	1	100
Total-----	435	123	28

Table 3. Significant defects, previously unknown, diagnosed for the first time in 131 adults through a multiphasic screening in East Harlem, 1956

Defect or disease	Total persons screened	Number of persons with acceptable examination or laboratory specimen	Number of defects diagnosed ¹
Active tuberculosis ² -----	435	428	2
Cardiac abnormality ² (by X-ray)-----	435	428	8
Cervical cancer ² -----	261	212	1
Syphilis ² -----	423	420	6
Hyperglycemia-----	420	375	38
Nutritional defect (not obesity)-----	431	431	41
Field vision defect-----	46	46	3
Near vision defect-----	128	128	21
Glaucoma-----	186	186	5
Other eye condition-----	186	186	2
Hypertension-----	432	432	46
Total -----	435	-----	173

¹ This does not include persons who needed referral for further treatment for a known pathologic condition such as cancer of the cervix, and who needed further persuasion to accept supervision and care.

² Indicates conditions in which the diagnosis was confirmed on followup. For all other conditions the persons were referred directly to treatment agencies.

Patients whose defects fell in a category for which the health center had no clinic service received an interview with the health officer and conference nurse. Previous knowledge of the condition and treatment status was determined and referral for further followup was made on the basis of need.

On the screening night, only 58 persons gave the name of a private physician to whom we could report the findings. In subsequent interviews of 358 persons during clinic followups or home visits, sometimes both, 117, or one-third, indicated that they had a doctor to whom the family at least occasionally went for treatment. Forty-four percent (156) used 1 of the 3 hospitals in the district, the majority, 117, the municipal hospital; 26 gave the name of a hospital outside of the district; and 59 said the family knew no treatment agency.

Some of the district's difficulties in followup can be gauged from the fact that the mail was returned "not found" for 24 patients. Most of these were traced by 2 medical students who

made home visits in July and August, but 9 were never located. What seems especially remarkable is that, although the patients spent several hours undergoing examination on the survey nights, not more than a handful came in or called up to inquire about the results.

During the summer of 1956, two 3d-year medical students visited the homes of 226 of the individuals who had participated in the program. Thus further information was obtained about the patients' previous awareness of pathology, current treatment status, other illnesses, treatment agencies used, family income, and number in the family. Language difficulties, evasiveness, and sometimes the obvious fact that the person interviewed did not know the answer to a question made some visits unsatisfactory, and we felt that statistical evaluation could not be applied to the answers. Only 125 visits were satisfactory and gave us valuable information otherwise not obtainable.

Summary and Conclusions

In the spring of 1956, three evening multiphasic screening sessions with nine tests available were held in the East Harlem Health Center. Of 435 individuals participating, all but 33 were residents of the district. Only 123 persons did not require recall. A total of 525 defects were found in 312 persons; 131 of these had relatively significant pathology of which they had no prior knowledge.

The findings of this survey suggest the incidence of a high degree of undiagnosed illness in the low-income, adult population of the district. Further investigation is needed to determine the size of the problem in this and other population groups. This type of investigation should be particularly rewarding because so many of the illnesses and defects found in the survey lend themselves to amelioration and cure.

Consideration should be given to the extent and manner in which the community should make available expanded facilities for diagnosis and followup. Perhaps of greatest importance is the need for health education designed to increase the individual's awareness of the existing services and facilities and to raise his standards for positive health.